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REMARKS

Claims 5, 8-12 and 15, 17-27 and 30 are all the claims presently pending in the application. Claims 5, 8, 11, 12, 15 and 30 have been amended to more particularly define the invention. Claims 16, 28 and 29 have been canceled.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 5, 8-12, 15, 17-27 and 29-30 stand rejected as allegedly directed to non-statutory subject matter. Claims 5, 8-12 and 15-27 upon informalities (e.g., 35 U.S.C. § 112, second paragraph). Claims 5, 8-12 and 15-30 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Dollinger (U.S. Patent No. 5,451,505).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as recited in claim 5) is directed to DNA having embedded information. The DNA includes a gene portion including genetic information, a portion, other than the gene portion, including no genetic information, and a nucleotide sequence which is not naturally occurring in said DNA and which is embedded in the portion including no genetic information, and includes source identification information for identifying a source of the genetic information in the gene portion.

Conventional DNA often includes genetic information (e.g., a value-added gene) embedded therein, in order to improve the characteristics of the organism having the DNA. However, such conventional DNA does not include any information therein to determine the source of the information (e.g., a value-added gene) embedded therein. Since DNA having such a value-added gene is easily copied, it is difficult to apply technical restrictions to the copying, by third parties, of value-added genes.

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The claimed invention, on the other hand, includes DNA having a nucleotide sequence which is not naturally occurring in said DNA and which is embedded in a portion of the DNA which includes no genetic information, and which includes source identification information for identifying a source of the genetic information in the gene portion. This nucleotide sequence may be used to identify the source of genetic information, for example, when the DNA is copied by a third party. Therefore, the claimed invention helps to prevent illegal copying of such genetic information (e.g., a value-added gene).

II. THE 35 USC §101 REJECTION

The Examiner alleges that the claimed invention, as recited in claims 5 and 8-12, 15, 17-27 and 29-30, is directed to non-statutory subject matter. However, Applicant submits that the subject matter of these claims is clearly patentable.

Specifically, Applicant notes that claims 5, 8, 11, 12 and 15 have been amended to include the features of claim 28, which was not rejected by the Examiner under 35 USC §101.

In view of the foregoing, the Examiner is respectfully requested to withdraw this rejection.

III. THE 35 USC §112, SECOND PARAGRAPH REJECTION

Claims 5, 8-12 and 15-27 stand rejected under 35 U.S.C. §112, second paragraph. Applicant respectfully disagrees with the Examiner.

Specifically, with respect to claims 5, 12 and 15, the Examiner states that “[i]t is unclear how a portion of DNA can be considered not to have genetic information when it is well known in the art that DNA is made up of nucleotides which are considered to be genetic information”.

However, Applicant respectfully submits that the Examiner has surprisingly decided to ignore the clear definition of “genetic information” which is provided in the Application, and instead use her own arbitrarily chosen definition. Applicant respectfully reminds the Examiner that she is bound by the definition of the term “genetic information” used in the Application and cannot on a whim decide to use her own definitions of terms.

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Indeed, nowhere does the Examiner state that one of ordinary skill in the art would construe the term "genetic information" to mean only a nucleotide. Further, the Examiner has provided not documentation to support her arbitrary meaning of the term "genetic information".

In fact, Applicant would point out that a nucleotide consists of a nitrogenous base, a sugar and one of three phosphate groups. Thus, the Examiner might as arbitrarily decide, for example, that a sugar is "considered to be" genetic information. Likewise, a sugar consists of carbon, oxygen and hydrogen atoms, so perhaps the Examiner might as arbitrarily decide that a carbon atom is "considered to be" genetic information.

Applicant again respectfully submits that the Examiner cannot assign such arbitrary definitions of terms. Instead, the Examiner is bound by the definitions given in the Application.

In this case, the Application states that "DNA consists of a gene portion wherein a protein code sequence and its transcription control information are stored, and a portion wherein genetic information is not included" (Application at page 13, lines 3-6). The Examiner surprisingly alleges that the above passage does not specifically define the phrase "no genetic information".

Applicant respectfully submits that rarely does a patent application explicitly provide definitions for each and every term in the claims with passages such as "the term x is defined as ..." or "the definition of x is...". Indeed, definitions are typically provided in a patent Application in a more subtle manner. Such subtle definitions are just as effective as explicit definitions, and the Examiner is just as bound by such subtle definitions and cannot choose to ignore such subtle definitions on a whim.

That is, while the Application may not explicit state that "the term 'genetic information' is defined as ..." or "the definition of 'genetic information' is ...", it is clear from the above passage that the Application intends for the term "genetic information" to be defined as "a protein code sequence and its transcription control information". This definition is further supported by Figure 1 which illustrates the "gene portion" and the "portion other than gene" in DNA. The Application explains that "only the gene portion pertinent to the protein is transcribed as an intermediate genetic material called mRNA" (Application at page 13, lines 6-10).

Thus, one of ordinary skill in the art would likely understand that a portion of DNA

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having "no genetic information" to mean a portion of DNA which does not include a protein code sequence and its transcription control information.

Therefore, the terms "genetic information" and "no genetic information" are clear and not indefinite.

With respect to claims 5, 8, 11-12 and 15, Applicant notes that these claims have been amended to delete the phrase "so as not to affect transmission of said genetic information".

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw this rejection.

IV. THE DOLLINGER REFERENCE

The Examiner alleges that Dollinger teaches the claimed invention. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Dollinger.

Dollinger discloses methods for tagging and tracing materials using nucleic acids as taggants. The process of tagging involves altering a substance in a manner that allows for the subsequent identification of the substance by detecting the alteration which involves nucleic acids (Dollinger at Abstract).

However, contrary to the Examiner's allegations, Dollinger does not teach or suggest *"a nucleotide sequence which is not naturally occurring in said DNA and which is embedded in said portion including no genetic information, and comprises source identification information for identifying a source of said genetic information in said gene portion"* as recited in claims 5 and 12 and similarly recited in claims 8, 11, and 15. As noted above, conventional DNA does not include any information therein to determine the source of genetic information (e.g., a value-added gene). Since DNA having such a value-added gene is easily copied, it is difficult to apply technical restrictions to the copying, by third parties, of such value-added genes (Application at page 1, line 8-page 3, line 8).

The claimed invention, on the other hand, includes a nucleotide sequence which is not naturally occurring in said DNA and which is embedded in a portion of the DNA which includes

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no genetic information, and which includes source identification information for identifying a source of the genetic information in the gene portion (Application at page 11, lines 1-21; page 16, line 8-page 16; page 20, line 6-page Figure 3). The embedded nucleotide sequence may be used to identify the source of genetic information, for example, when the DNA is copied by a third party (Application at page 11, lines 9-21).

Clearly, these novel features are not taught or suggested by Dollinger. Indeed, Applicant respectfully submits that Dollinger is so overwhelmingly unrelated to the claimed invention, Applicant really does not know where to begin explaining the extreme differences between Dollinger and the claimed invention.

First, it is very important to note that the claimed invention is directed to DNA. Dollinger has nothing to do with DNA. Applicant respectfully requests that the Examiner carefully consider this very important point. Again, for emphasis, Dollinger has nothing to do with DNA.

Instead, Dollinger discloses a method for tagging and tracing materials using nucleic acids as taggants. For example, Dollinger discloses adding a taggant (e.g., a nucleic acid) to an item such as radioactive waste, gunpowder, oil, paper goods, food stuffs, etc. by either spraying the taggant onto the surface of the item or physically mixing the taggant and the item (Dollinger at col. 4, lines 113-19). Dollinger states, for example, that the nucleic acid taggant may be "covalently bound" to a component of the item.

Further, the purpose of "tagging" the item in Dollinger is to allow for identification of the source of the item. Thus, for example, a barrel of radioactive waste can be "tagged" with a nucleic acid (e.g., by actually using an aerosol can (or pump, or spray bottle, etc.) to spray the nucleic acid on the barrel of radioactive waste), so that when the barrel is discovered in a creek somewhere, the source of the barrel of radioactive waste (e.g., Three Mile Island) can be easily identified by detecting the taggant, and the barrel can be returned to its rightful owner.

This is completely different than the claimed invention. Indeed, unlike Dollinger, the claimed invention is not necessarily related to radioactive waste. Instead, the claimed invention is directed to DNA. Again, Dollinger has nothing to do with DNA.

Moreover, even assuming somehow that Dollinger did have something to do with DNA,

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Dollinger certainly does not teach or suggest DNA having a nucleotide sequence which is not naturally occurring in the DNA and which is embedded in a portion including no genetic information (e.g., a non-gene portion of the DNA), and includes source identification information for identifying a source of the genetic information in the gene portion.

The Examiner surprisingly attempts to equate the taggant (which is applied with a spray bottle to the barrel of radioactive waste), with the nucleotide sequence in the claimed invention. However, the taggant in Dollinger and the nucleotide sequence in the claimed invention are completely unrelated.

First, the taggant is not embedded in DNA, let alone a portion of DNA including no genetic information (e.g., a portion of DNA which does not include a protein code sequence and its transcription control information). Instead, as noted above, the taggant is applied to the barrel of radioactive waste with a spray bottle.

Second, the taggant does not include source identification information for identifying a source of genetic information in a gene portion of DNA. Instead, as noted above, the taggant is merely used to identify the source of the barrel of radioactive waste.

Thus, it is completely unreasonable to attempt to equate the taggant in Dollinger with the "nucleotide sequence" of the claimed invention.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggested by Dollinger. Therefore, the Examiner is respectfully requested to withdraw this rejection.

V. FORMAL MATTERS AND CONCLUSION

Applicant respectfully requests that the Examiner consider the documents submitted with the Information Disclosure Statement filed on May 17, 2004, and acknowledge her consideration of the documents in her next Official Communication.

In view of the foregoing, Applicant submits that claims 5, 8-12 and 15, 17-27 and 30, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above

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application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

Date: 9/1/04

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing Amendment was filed by facsimile with the United States Patent and Trademark Office, Examiner Carolyn Smith, Group Art Unit # 1631 at fax number (703) 872-9306 this 1st day of September, 2004.



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